REMARKS

The specification has been reviewed, and clerical errors of the specification have been amended.

On page 2 of the Action, claims 1 and 5-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Douglas in view of Bier. On page 3 of the Action, claims 2, 3 and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Douglas in view of Bier and Baba et al. On page 4 of the Action, claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Douglas in view of Bier and Smith et al.

In view of the rejections, claim 1 has been amended to clarify the features of the invention.

As clearly recited in amended claim 1, an ion trap mass spectrometer of the invention comprises an ion supply source for supplying ions; an ion storing section disposed near the ion supply source and having an entrance side close to the ion supply source, an exit side opposite to the entrance side, and means for providing an RF electric field for holding the ions inside ion storing section; an entrance gate electrode disposed between the ion supply source and the entrance side of the ion storing section, the entrance gate electrode being controlled to introduce and retain the ions in the ion storing section; an exit gate electrode disposed near the exit side of the ion storing section, the exit gate electrode being controlled to retain the ions in the storing section and emitting a bunch of ions; and an ion trap section disposed at a side opposite to the ion storing section relative to the exit gate electrode. The ion trap section includes means for cutting off an RF voltage while the bunch of ions emitted from the ion storing section enters the ion trap section, and means for suddenly applying the RF voltage when a maximum amount of the ions stays inside the ion trap section.

In the invention, the means for providing the RF electric field provides an axial electric potential inclined from the entrance side to the exit side of the ion storing section so that the ions are confined and gathered near the exit side in the ion storing section. Accordingly, when the ions in the ion storing section is transferred to the ion trap section, a large amount of ions can be effectively

sent to the ion trap section.

In Douglas, an ion trap mass spectrometer includes a chamber 42 defined by plates 40, 42 and having rods 44 therein, and an ion trap 58. The plates 40, 42 and rods 44 hold ions inside the rods 44. The plates 40, 42 and the rods 44 correspond to the entrance gate electrode, exit gate electrode and ion storing section of the invention. However, the rods 44 does not provide the axial electric potential inclined from the entrance side to the exit side. Therefore, the rods 44 can not confine the ions at the exit side, which is the main features of the invention. Thus, the features of the invention are not disclosed in Douglas.

In Bier, an ion trap mass spectrometer includes octopoles 19, 23 with an aperture 21 therebetween. The octopole 19 receives RF and acts to transmit ions from a skimmer 14 through the aperture 21 formed in an interoctopole lens 22. Ions traveling through the aperture 21 are directed by a second RF operated by the octopole 23 into an ion trap 24.

In the invention, the ion storing section provides ions to the ion trap, as in Bier. However, in the invention, the means for providing the RF electric field provides the axial electric potential inclined from the entrance side to the exit side in the ion storing section so that the ions are confined and gathered near the exit side in the ion storing section. The octopoles 19, 23 do not provide the axial electric potential inclined from the entrance side to the exit side therein. Thus, the features of the invention are not disclosed or suggested in Bier.

In the Action, it was referred to column 3, lines 17-19, wherein after the introduction of ions into the ion trap 24, the RF voltage applied to the quadrupole ion trap is ramped, as shown at 27, Fig. 2A. This means that the RF voltage as shown in Fig. 2A is applied to the ion trap, not the octopoles 19, 23. Namely, when analyzing the ions after introducing to the ion trap 24, the RF voltage in the ion trap 24 is increased. Ions in the octopole 23 are not gathered at the side of the ion trap 24.

In the Action, also, it was held that ions can be blocked by applying a low RF voltage, but the devices to which the low RF voltage

is applied are the octopoles 19, 23, not in the ion trap section as in the invention.

Therefore, Bier does not disclose or suggest the axial electric potential inclined from the entrance side to the exit side in the ion storing section, as defined in the invention.

In regard to Baba et al., it was held in the Action that the electrodes 63' are connected to resistors with an appropriate resistance R. However, the resistance that the Examiner referred to is an example of an equivalent electric circuit for the electrostatic harmonic potential used for a linear RF quadrupole ion trap. In the invention, in addition to the ion trap section, the ion storing section is formed, wherein the axial electric potential is inclined from the entrance side to the exit side. Baba et al. does not disclose or suggest that the means for providing the RF electric field provides the axial electric potential inclined from the entrance side to the exit side of the ion storing section so that the ions are confined and gathered near the exit side in the ion storing section. Although the electrodes are connected to the resistors in Baba et al., the features of the invention are not disclosed or suggested in Baba et al.

In Smith et al., a series of elements within a region is formed, such that the elements have successively larger apertures to form an ion funnel. RF voltages are applied to the elements so that the RF voltage on the element has phase, amplitude and frequency necessary to define a confinement zone for charged particles of appropriate charge and mass in the interior of the ion funnel. In the invention, the means for providing the RF electric field provides the axial electric potential inclined from the entrance side to the exit side of the ion storing section so that the ions are confined and gathered near the exit side in the ion storing section. Smith et al. has the series of elements, but the elements are not designed to be used for the ion storing section in association with the ion trap section. Also, it is not disclosed that the ions are not confined and gathered near the exit side in the ion storing section. The features of the invention are not disclosed or suggested in Smith et al.

As explained above, the cited references do no disclose or

suggest the features of the invention. Even if the cited references are combined, the features of the invention are not obvious from the cited references.

Reconsideration and allowance are earnestly solicited.

Respectfully submitted,

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by _____

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